

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

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## (PCT Article 36 and Rule 70)

Applicant's or agent's file reference A161520	<b>FOR FURTHER ACTION</b>	
		See Form PCT/PEA/416
International application No. PCT/IB2004/003580	International filing date (day/month/year) 01.11.2004	Priority date (day/month/year) 28.11.2003
International Patent Classification (IPC) or national classification and IPC F03B13/18		
Applicant ARLAS INVEST, S.L. et al		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>(sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</i></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</i></p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>

Date of submission of the demand 20.09.2005	Date of completion of this report 17.11.2005
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Angelucci, S Telephone No. +31 70 340-4330
	

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IB2004/003580

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-12 . as originally filed

**Claims, Numbers**

1-11 as amended (together with any statement) under Art. 19 PCT

**Drawings, Sheets**

1/4-4/4 as originally filed

a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Re Item V.**

- 1 The following documents are referred to in this communication:  
D1 : US 2002/131824 A1 (SANCHEZ GOMEZ GINES) 19 September 2002 (2002-09-19)
- 2 Document D1, which is considered to represent the most relevant state of the art, discloses:

an energy generating system using sea waves, which includes at least one floating body, a ballast, at least one connecting cable or chain between said ballast and said floating body, means for converting the movement of said floating body into mechanical energy, at least one recovery device, situated inside said floating body that permits recovery of said cable or chain to its initial position during the descent of the wave, at least one device for converting said mechanical energy into energy other than mechanical energy, situated inside said floating body, and means for transmitting said energy to dry land or to a fixed structure, whereby said floating body is mounted on a structure, whereby it includes at least one horizontal shaft integral by its ends to said structure, and whereby said means for converting the movement of said floating body into mechanical energy include a moving housing around which the connecting cable or chain winds, with said housing being mounted in rotating fashion in relation to said horizontal shaft, in such a way that it rotates under the action of said wound cable or chain.

From this, the subject-matter of independent claim 1 differs in that:  
a ballast chain or cable is provided and the at least one connecting cable or chain is placed between said ballast chain or cable and said floating body.

- 2.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT)  
The problem to be solved by the present invention may be regarded as:
  - the cable or chain connecting the floating body to the ballast is submitted to high stresses that reduce the energy generating system useful life, for in addition to the tensile and flexion forces, said chain or cable is also subjected to the torsion forces

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generated by the action of marine currents and other outside agents, due to the rotation of the entire floating body around an imaginary vertical axis.

- 2.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

there exists a specific cable for ballasting the body which is independent from the connecting cable that winds on the floating body. Said specific ballast cable or chain, as it does not have to wind or unwind, can be oversized or designed such that the torsional force to which it is submitted does not reduce the energy generating system useful life.

- 2.3 Claims 2-11 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.
3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.



IB/04/3580

## NEW SET OF CLAIMS

1. Energy generating system using sea waves, which includes at least one floating body (1), a ballast (2), a ballast chain or cable (3), at least one connecting cable or chain (4) between said ballast chain or cable (3) and said floating body (1), means for converting the movement of said floating body (1) into mechanical energy, at least one recovery device, situated inside said floating body (1) that permits recovery of said cable or chain (4) to its initial position during the descent of the wave, at least one device for converting said mechanical energy into energy other than mechanical energy, situated inside said floating body (1), and means for transmitting said energy to dry land or to a fixed structure, characterised in that said floating body (1) is mounted on a structure (5), in that it includes at least one horizontal shaft (9) integral by its ends to said structure (5), and in that said means for converting the movement of said floating body (1) into mechanical energy include a moving housing (10) around which the connecting cable or chain (4) winds, with said housing (10) being mounted in rotating fashion in relation to said horizontal shaft (9), in such a way that it rotates under the action of said wound cable or chain (4).

2. Energy generating system according to Claim 1, characterised in that said at least one device for converting the mechanical energy includes an electrical generator (15) and means for transmitting said mechanical energy to said generator (15).

3. Energy generating system according to Claim 2, characterised in that said means of transmitting said mechanical energy to said generator (15) include an interior crown gear (12) attached so as to form part of the moving housing (10), a pinion (13) that meshes with said crown gear (12) and a multiplier (14) attached to said pinion (13).

4. Energy generating system according to Claim 1, characterised in that it includes at least two floating bodies (1) mounted on said structure (5) and at least two parallel horizontal shafts (9) integral by their ends to said structure (5), with the cables or chains (4) of said floating bodies wound in the opposite direction on the moving housings (10) of the floating bodies (1), in such a way that they rotate in opposite directions to one another due to the action of said wound cables or chains (4).



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5. Energy generating system according to Claim 1, characterised in that said recovery device includes a coil spring (11), said spring (11) being attached by one of its ends to the horizontal shaft (9) integral to the structure (5) and by another of its ends to the moving housing (10) of said floating body (1).

6. Energy generating system according to Claim 1, characterised in that said structure (5) includes at least one profile parallel to said at least one horizontal shaft (9) and means for cleaning off the marine incrustations on the outer face of said moving housing (10), attached to said profile and to said structure (5).

7. Energy generating system according to Claim 6, characterised in that said means for cleaning off the incrustations are scrapers.

8. Energy generating system according to Claim 1, characterised in that it includes at least one intermediate buoy (7) attached to said ballast chain or cable (3).

9. Energy generating system according to Claim 1, characterised in that it includes a plurality of modules (17), each of them formed of at least one floating body (1).

10. Energy generating system according to Claims 8 and 9, characterised in that each module (17) is formed by at least said floating body (1) and by at least said intermediate buoy (7) attached to said ballast chain or cable (3).

11. Energy generating system according to Claims 1 or 6, characterised in that said structure (5) includes means for guiding said connecting cable or chain (4).

----- Claim 12 deleted -----